

Running Head: FINANCIAL VALUE OF CARE

A Study of the Financial Value of Care of a Notional Orthopedic Clinic

A Graduate Management Project

Submitted to the Faculty of the U.S. Army – Baylor Program

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by

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### Abstract

The purpose of this study was to discuss a Financial Value of Care methodology developed by Naval Medicine and illustrate how clinic managers can utilize the data to improve business decisions. The study utilized a descriptive cross sectional case study methodology employing secondary data analysis and analysis of internal historical workload and expense data. An adaptation of the nursing process was utilized as a theoretical model for the analysis of data. Data for the study was obtained from the Naval Medicine Data Repository for a Notional Orthopedic Clinic from FY 2002. The study concludes that the Financial Value of Care when used in conjunction with variance analysis techniques provides a powerful clinical business management tool.

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## A Study of the Financial Value of Care of a Notional Orthopedic Clinic

### Introduction

Concerns regarding increasing health care costs in the popular media are a frequent topic as the nation approaches a Presidential election. Providing a base for these concerns are a myriad of statistics and reports. Healthcare costs to employers, one of the main purchasers of health care in the United States have, doubled since 1999 (The Advisory Board, 2003). Although increases in healthcare spending slowed in 2002, health care is predicted to consume 17.7 percent of gross domestic product by 2012 (Heffler et al., 2003).

The Department of Defense (DoD) has not been insulated from the increasing cost of health care. Although the end strength of the armed forces was reduced by 38 percent during the 1990s, DoD healthcare spending nearly doubled increasing from \$14.6 billion in 1988 to \$27.2 billion in 2003 (Congressional Budget Office [CBO], 2003). The anticipated decrease in health spending that was expected from the force reduction did not occur due to, among other things, the increasing costs of technology advances, pharmaceuticals and the ever-increasing retiree population. This point is illustrated by the fact that after adjusting for inflation the DoD spent more than \$19,000 per active service member in 2003 vice \$6,600 per active service member in 1988 (CBO). The decade of the 1990s was a period of revolutionary changes, which impacted the way the DoD delivered health care. The impact of the introduction of TRICARE and migration to ambulatory care from inpatient care acted in concert with rising healthcare costs to change the playing field of the Military Health System (MHS) (Goodman, 2000).

Secretary of the Navy Gordon R. England addressed this issue in his 2003 confirmation hearings when he identified improving business practices as one of his four objectives in



strengthening the Navy (England, 2003). The status quo of poor business decisions as highlighted by Secretary England is not endemic to the U.S. Navy. The civilian healthcare industry as well as the business world in general has been plagued in recent years with poor decision-making skills. Marcum, Smith, & Khalsa (2002) spoke of the high level of confidence with which business decisions are made. However, they conclude that the vast majority of business decisions are linked to failed outcomes. These issues point to the need for improved decision-making support tools and processes not only in the business world, but also within the MHS to ensure survivability in this time of increasing costs.

#### *Conditions Which Prompted the Study*

As the MHS embarks on the new generation of TRICARE contracts in 2004, ever increasing attention will be directed to how Defense Health Program (DHP) funds are utilized. Evidence of increased scrutiny is provided in a CBO report released in September 2003 that suggests four strategies to rein in MHS spending. These strategies are all focused at limiting the pool of beneficiaries to reduce utilization. The CBO report focuses on decreasing utilization as the key to controlling costs related to its uncertainty of the MHS' ability to gain sufficient efficiencies to overcome the spending obstacle.

Further evidence of increased fiscal scrutiny is found in the 2004 DHP Performance Plan (Performance Plan, 2004). This is a contract between the Deputy Secretary of Defense and the Assistant Secretary of Defense for Health Affairs to identify DHP performance standards for fiscal years 2004 through 2008. The contract contains eight unit costs and performance metrics. The focus throughout the performance contract metrics is productivity. Specific to the ambulatory care arena, the primary productivity measures are Relative Value Unit (RVU) per

Full Time Equivalent (FTE) per eight-hour day in U.S. military primary care clinics and total Relative Value Units generated in primary and specialty care in MTFs.

Glass (p. 2, 2003) defined RVU as “nonmonetary, relative units of measure that indicate the value of health care services and relative differences in resources consumed when providing different procedures and services”. Full time equivalent, as defined by Finkler and Ward (p. 423, 2002), is “the equivalent of one full-time employee paid for one year, including both productive and nonproductive time”. Thus, in using RVU/FTE/Day, the DHP contract is tracking the individual productivity of all primary care clinicians. Following from these definitions, the contract is also interested in the overall productivity as the contract addresses total RVUs from the system.

The MHS functions differently than its civilian counterparts in terms of its source of fiscal resources. Civilian organizations are reimbursed for services provided. The MHS is funded by Congressional Appropriations on an annual basis. This funding distinction encourages civilian organizations to closely monitor the expense and revenue aspects of the budgetary picture. The DHP performance contract focuses on RVU/FTE/DAY and not expense and revenue measures. RVU/FTE/DAY provides knowledge of how much work is accomplished or how much has been produced. The information lacking is how much revenue is produced for a given level of expense. Selection of RVU/PROVIDER/DAY is understandable, as the MHS does not actively bill for services.

The current Presidential administration is focused on improving the resource allocation process to the DoD. Evidence of this focus is provided in the Budget and Performance Integration Initiative associated with the FY 2005 President’s Budget. This initiative establishes

a defined need for resource requests to be aligned with performance metrics. This new requirement will be fully integrated by FY 2008. This alteration in the resource allocation process has led the Office of the Assistant Secretary of Defense for Health Affairs (OASD/[HA]) to shift towards an output driven allocation process (ODRA). ODRA will be based upon the value of requests vice the traditional focus on the cost of requests. Under this model, production will be the key budget allocation determinant and as such, reporting mechanisms will need to be focused on production.

The Surgeon General of the Navy, following the lead of the Secretary of the Navy and the Chief of Naval Operations, has identified the need to improve the business decision-making processes within Naval Medicine (Cowan, 2002) and (Cowan, 2003). The first step in this process is the realization that clinical management decisions are, in fact, business decisions to a certain extent. The Navy Surgeon General has chartered a working group to develop a training pipeline to bolster this identified area for improvement in Naval Medicine in the long term. Simultaneously the Medical Operations Support Directorate (M3M), Resource Management and Comptroller Directorate (M8), and Personnel and Manpower Directorate (M1) of the Bureau of Medicine and Surgery (BUMED), Naval Medicine's headquarters element, in concert with the Healthcare Support Offices (HSOs) are undertaking the training of all MTF commanders in the business planning process to address the issue in the short term. One of the central themes of these training sessions is the accurate capturing of productivity. Historically, Naval Medicine has measured productivity by tracking the number of visits and alternately, the number of encounters as defined in the MEPRS manual. These measures do not account for differing levels of intensity of services provided. Reflecting policy changes at OASD/(HA), the training sessions

focus on the use of work RVUs to measure productivity. By solely tracking RVU/FTE/DAY, leaders are excluding a key component of the planning process, revenue and expense data. These issues significantly impact business decisions. Thus, in order to accomplish the goals set forth by the Secretary of the Navy and the Navy Surgeon General, the input used to base clinical management questions needs to change.

The total productivity ratio, as presented by Finkler and Ward (2002), adds the component of value to the RVU/FTE/DAY metric. This enables leaders from the local clinic manager to the Surgeon General of the Navy to speak the same language of value and productivity. Presently within the MHS and in particular Naval Medicine, it is possible to collect all of the data required to determine the value of care being provided. Value (theoretical revenue) information exists in the form of the CHAMPUS Maximum Allowable Charges (CMAC) Table. RVU and FTE information is readily available in the MHS Management Analysis and Reporting Tool (M2) data mart within the MHS Data Repository. RVUs are determined via an automated process and reflected on the Standard Ambulatory Data Report (SADR). The SADR represents the marriage of the Composite Health Care System (CHCS) appointment module information with the corresponding Evaluation and Management (E&M) and Common Procedural Terminology (CPT) code information from the Ambulatory Data Management (ADM) module of CHCS. FTEs are determined from time allocation data entered into the Standard Personnel Management System (SPMS) and processed via the Expense Accounting System (EAS) IV system, which is the official source for available FTE information within the DoD (BUMED, 2003). Expense information is available via the DoD Medical Expense and Performance Reporting System (MEPRS). MEPRS provides a systematic approach

for capturing and reporting healthcare related costs in a uniform manner throughout the MHS. Across the military branches, it provides detailed performance indicators, common expense classification by work centers, personnel utilization by work centers and a uniform cost assignment methodology. All expense information (direct and indirect) associated with the delivery of medical care within fixed military treatment facilities is reflected in MEPRS, including personnel time allocation data. The data provided by MEPRS is utilized by the DoD for creation of actuarial liability estimates and is included in the DoD's annual agency-wide audited financial statements (OASD/[HA], (2000).

Naval Medicine utilizes the Summarized Management Analysis Resource Tool (SMART) as its query tool for financial data. The purpose of SMART is to provide an expense tracking and web-enabled tool. SMART allows financial data, including MEPRS data, to be queried from multiple sources and imported to a spreadsheet application enabling the use of a variety of analytic tools and report creation. SMART is unique to Naval Medicine and as such is used to monitor cost and expense, both financial and workload, performance of Navy MTFs, Dental Treatment Facilities (DTF) and Clinics (SSC Charleston NCR, 2003).

As Naval Medicine is on the verge of a Sea Change in how it approaches business decisions and resource allocations, it would benefit the organization to have an eye on the future and develop tools today with future applicability. I propose that without an understanding of the value of production the military healthcare leader misses a key tool in the business decision-making process, which will have dramatically deleterious impacts under ODRA. The MHS leader of the future will need a tool, which illuminates the value as well as the expense portion of the productivity formula. Presently Naval Medicine is developing a Net Value Module as part of

the new web based BUMED Business Planning Tool (BBPT) which applies geographically adjusted CMAC rates to the RVUs produced and subtracts out expense data to provide the MTF commander with a bottom line figure of their contribution to the enterprise.

Historically in Naval Medicine there is no standard tool or process, which combines these data points in a reportable metric. Such a tool would increase the quality of business decisions and as such, be a valuable clinical management tool throughout the enterprise, paving the way for the transition to ODRA and the next generation of TRICARE contracts. Presently, similar information is obtained at multiple levels of the organization and frequently dramatically different data queries and methodologies are utilized. From empowering the local clinic manager by adding objective evidence to operating decisions, to providing the product line manager a tool with which to compare different clinics within the product line, to providing a hospital commander with a dashboard metric by which to assess overall command productivity, a Financial Value of Care metric would be invaluable.

#### *Statement of the Problem*

Presently there is no standard process to combine and compare expense and revenue data to determine a Financial Value of Care produced by an individual clinic. This paper will discuss a methodology for determining a Financial Value of Care in order to answer the following questions. How can the work center manager determine the contribution of his / her clinic to the organization? Is the financial Value of Care an applicable or useful measure of productivity? How can the work center manager use this information as a clinical business management tool?

*Literature Review*

One of the key determinants distinguishing top performing healthcare organizations is the ability of managers to utilize data and information in the decision making process. The advent of e-commerce and the rapidly increasing prevalence of technology in health care will only increase the need for managers and leaders to integrate data interpretation skills to their daily regimen. However, data and information should not be seen as a replacement for sound decision making processes but rather a tool to be implemented in the process (Kongstvedt, 2002). Even with the increase of technology and new business models and processes, the core of healthcare business decisions will continue to focus on improving access and controlling costs to provide quality health care. In this environment, managers of healthcare organizations who make sound, well founded business decisions, which keep high quality, cost effective care as the focus, will set themselves apart and become valuable assets to their organizations and patients (Brady & Hankins, 2003).

Regardless of the industry, defining productivity has historically been troublesome. Health care is no exception. Kongstvedt (p. 480, 2002) presented three questions, which once answered, will provide a definition of productivity. He presented them as: 1.) "What is the nature of the work to be accomplished?" 2.) "Who will accomplish the work?" 3.) "What tools and other resources are available to support the work effort?" Finkler and Ward (p. 429, 1999) narrowed the focus by defining productivity from a financial perspective as: "the ratio of any given measure of output to any given measure of input over a specified period of time."

The issues of quality and outcomes measurement compound the measurement of the productivity in health care. While not the focus of this study, healthcare managers need to be

aware of the impact on quality from making purely financial decisions. DiJerome, Dunham-Taylor, Ash, and Brown (1999) identified utilizing appointment availability, appointment scheduling difficulty, in-clinic wait times, and reports of job satisfaction as monitors of quality. The difficulty in measuring outcomes in health care has led to the use of proxies such as visits, treatments, admissions or discharges.

The RVU is the product of a contract between the Health Care Financing Administration (HCFA), which is now known as the Centers for Medicare and Medicaid Services (CMS), and the Harvard School of Public Health and the American Medical Association (AMA). Congress tasked this workgroup in the 1980s to develop a replacement for the prevailing tool for determining physician compensation, which was the “customary, prevailing and reasonable” rate. The group produced the resource-based relative value system (RBRVS). The RBRVS combines common procedural terminology codes (CPT), frequency with which the assigned codes are seen, descriptions of the codes and relative value units to determine a standardized output, enabling comparison across specialty lines (Shackelford, 1999). CPT codes are numeric codes assigned to procedures for tracking and identification purposes. The codes are delineated and revised annually in *Physician’s Current Procedural Terminology* published annually by the American Medical Association. CPT codes are subdivided into Evaluation and Management (E&M) codes to enable an accounting of non-procedural portions of a patient encounter or the provider’s evaluation and management. RVUs are determined for a given patient – provider encounter by the combination of E&M code and any number of CPT code as assigned based upon the provider’s documentation. RVUs are subdivided into three parts to capture the



different components of a patient encounter. These categories are physician work (work RVU), malpractice expense (Malpractice RVU), and practice expense (facility RVU) (Glass, 2003).

RVUs were developed primarily as a reimbursement tool. Secondary uses for the RVU is as a productivity measure, tool for cost analysis, and means to establish internal benchmarks (Glass, 2003). Although developed solely as a tool to determine physician reimbursement, the RVU has become a universally accepted measurement of ambulatory productivity. St. Andrew (2003) concluded that although the RVU has limitations, it is the best tool for gauging the intensity of provider effort, decision-making processes and procedure completion.

The difficulty in measuring productivity and outcomes in health care, which necessitates the use of proxies, affects RVUs as well. St. Andrew (2003) identified the failure of RVUs to reflect quality of care as well as demand for services as limitations, which preclude the metric from being used as a stand-alone decision tool. Glass (2003) clarified that RVUs cannot be used as a risk-adjusting tool, case severity measure, determinant of coding completion nor as a diagnostic tool. RVUs are limited by how they are viewed and interpreted by providers. Some RVUs are weighted greater than others without apparent reason. Some patient encounters garner more RVUs than seemingly similar patient encounters without apparent reason. Additionally, RVU determination is dependant upon accurate and consistent assignment of E&M and CPT codes based upon provider documentation of the patient encounter. Some suspect providers will choose the heaviest weighted and least time and labor-intensive procedures and treatments for the purpose of artificially increasing their productivity. Further, some clinicians view the tracking of RVUs by administrators and the subsequent impact on provider documentation as

additional work for the clinician to justify to administrators that providers are doing their job (Lantos, 2003).

Given the identified limitations of using the RVU to measure productivity, the benefits outweigh the limitations. The ability to compare and contrast providers of varying specialties in a common language is a tremendous asset to healthcare managers. Accounting for costs per RVU as opposed to a fee schedule, allows for more meaningful discussions of productivity with providers (Shackelford, 1999). The ability to track costs and revenue per RVU enables the healthcare manager to follow internal trends, industry standards and benchmarks as well as provide valuable information for strategic planning (Sides, 2000). The ultimate outcome is a tool enabling more cost-effective operations.

In a case study of an endoscopy department, DiJerome, et al. (1999) developed a methodology to evaluate cost center productivity. The study was conducted during a year in which a merger occurred. Subsequently there was an increase in volume of procedures and the requirement to staff two geographically separate units. The methodology increased the utility of management decisions during turbulent times. The key components of the methodology were volume of patients, number of required FTEs, labor expense and total revenue. The tracking of these data points provided the ability to frequently monitor and implement cost saving measures when needed versus waiting for year-end. At year's end the department achieved a positive financial position. The authors noted that appointment availability, scheduling delays, in-clinic waiting times, patient satisfaction, patient outcomes, and staff satisfaction were all monitored in order to ensure quality of care and access to care were not negatively impacted. The methodology employed by DiJerome et al. follows the total productivity ratio without the actual

computation of the value as defined by (Finkler & Ward, 2002). The total productivity ratio presents productivity as the quotient of operating revenue divided by the sum of supplies added to labor added to capital added to overhead (productivity = operating revenue / supply costs + labor costs + capital + overhead costs).

Within Naval Medicine the definition of productivity has not been widely agreed upon. Although there are varied personal preferences of a definition of productivity, the DHP Performance Contract identifies RVU/FTE/DAY as the main productivity metric for primary care and total RVUs for ambulatory care productivity which encompasses all specialty and primary care services. With the establishment of this contractually determined metric, Naval Medicine has been assigned a definition of productivity. As illustrated by Shackelford (1999), St. Andrew (2003), and Glass (2003), there is a similarity to the civilian healthcare industry in using the RVU as a measure of productivity. However, as identified in the DHP Performance Contract, the DHP does not apply cost information or revenue information to this metric.

Noting this exclusion, BUMED (specifically M1, M3M, M8) is developing an Internet based business planning tool (BBPT) to assist MTF commanders in developing executable business plans in congruence with BUMED direction. This tool will include a series of modules building a systematic assessment of an MTF's business practices to guide the MTF commander through an algorithm resulting in an executable business plan. Specific modules are dedicated to the Mission and Vision, Market Assessment, Access to Care, Personnel and Workload. The pinnacle module of the BBPT will be the Net Value Module, which presents the commander with a bottom line figure detailing the financial contribution of the MTF to Naval Medicine. The BBPT is linked to the MHS Management and Analysis Reporting Tool (M2) and the CMAC

table from which it queries data to determine whether the facility generated more potential revenue than it did expenses. The output of this tool is presently focused on the MTF level, however, it allows for the mining of data to the individual clinic level.

Wyatt (2004) identified the need for a centralized standard source for data queries and metric calculations within the civilian healthcare sector as no single vendor provides a product to combine the myriad of data in one system. Wyatt (2004) presented such a tool as a source for corporate dashboard metrics such as departmental operating margin. He stated that managers equipped with such information can act in a timelier manner to address emerging issues. Additionally, standardized reports and data queries would increase the validity and reliability of corporate metrics (Wyatt, 2004).

Kongstvedt (2002) identified the importance of data interpretation on the success of healthcare facilities. Sides (2000) used a cost analysis approach in her methodology of assessing contract profitability. DiJerome et al. (1999) utilized a sophisticated expense and revenue analysis methodology in approaching the subject of measuring productivity in health care. Clearly the literature supports the Secretary of the Navy and Navy Surgeon General's desire for better business practices within the Naval Medicine as well as in the civilian health care sector. In order to achieve the Secretary of the Navy's goal, training will need to be provided. Sustaining the achievement of this goal will be dependant on a cultural change within the leadership of Naval Medicine (Ginter, Swayne, and Duncan, 2002).

Marcum et al. (2002) discussed the need for better business decisions in the civilian sector. They presented an eight-step approach focused on changing the way in which issues are addressed. Specifically, one of the steps addresses the need to utilize data as evidence in making

decisions. Brady and Hankins (2003) presented a similar argument in the healthcare administration world. They illustrated the benefits and need for clinicians to gain competence in fiscal matters in preparation for supervisory positions in which budget decisions will be made. Additionally, Brady and Hankins discussed how administrators and clinical managers gain credibility with providers and senior leaders when presenting decisions that are factually supported by data.

### *Purpose*

The purpose of this study is to discuss a Financial Value of Care (FVOC) methodology developed by Naval Medicine and illustrate how clinic managers can utilize the data to improve business decisions. The study will present that the FVOC when used in conjunction with variance analysis techniques provides a powerful clinical business management tool. The FVOC enables the clinic manager to track internal trends and industry standards to achieve greater cost efficiencies.

### *Methods and Procedures*

The study utilized a descriptive cross sectional case study methodology employing secondary data analysis and analysis of internal historical workload and expense data (Cooper and Schnidler, 2001). The study utilized the BBPT developed by BUMED. This tool calculates a Financial Value of Care based in part on the total productivity ratio espoused by Finkler and Ward (Finkler & Ward, 1999).

All data were obtained via the BBPT, which was developed to use standard data queries and computation formulas, which were congruent with the methodology identified by DiJerome

et al. and Finkler and Ward (DiJerome et al., 1999) (Finkler & Ward, 1999). This tool is a web-based application that potentially could be available to the clinical manager level.

Actual FVOC data was analyzed for a notional orthopedic clinic that is part of a free standing ambulatory care center which offers complete primary care services, selected specialty care, acute care services, pharmacy, laboratory, and radiology services. Data for the entire fiscal year 2002 was analyzed. The clinic was selected based upon researcher knowledge of clinic functioning, pure MEPRS cost code assignment, and absence of graduate medical education program (GME). All of these factors enabled the application of the FVOC concept to the specialty care arena. Ambulatory Procedure Visit (APV) and Surgical Time data were not considered in this study to enable future application of the findings to non-surgical clinics.

The BBPT determined value of care by applying published geographically adjusted CMAC rates with an added 19 percent administrative charge to work RVUs determined by the SADR and queried from the M2. The 19 percent administrative fee represented the difference between pure CMAC rates and the amount TMA reimburses external contractors for providing care. Thus, if an MTF was to bill TMA for the care provided, this is the amount TMA would reimburse. BUMED developed the calculation in the BBPT in this manner anticipating the implementation and impact of ODRA (D. P. Dinneen, personal communication, February 10, 2004).

Expenses were determined by totaling the direct expenses assigned to the clinic (MEPRS code BEA) with ancillary and administrative expenses (MEPRS D\*\* and E\*\* codes respectively) queried from the EAS IV system via the M2. The BBPT defined direct costs in concert with MEPRS Guidance as “the value, measured in dollars, of the transactions and events

of work centers and/or accounts” (BUMED, 2004). Labor expenses were aggregated to the direct expenses, thus it was possible to query labor expenses in isolation of all other expenses. This allowed the researcher to calculate the percentage of total expenses derived from labor. Administrative costs were those administrative overhead costs, which were applied to revenue centers via the step-down allocation process under the MEPRS system. The “E” MEPRS code is an intermediate account, which is allocated to the final revenue center account of the “B” MEPRS code in this case. Ancillary costs were the sum of radiology, laboratory, and pharmacy costs generated by the revenue center. Essentially the BBPT used B (ambulatory), D (ancillary; laboratory / radiology/ pharmacy), and E (support services or administrative costs) codes for the determination of expenses. Additionally, total work RVU and available FTEs were queried from the BBPT as well (BUMED, 2004).

Once the value and expense information was determined, the BBPT calculated the FVOC. This step was simply the subtraction of the determined expenses from the determined value. Ideally the goal is to produce a positive number. In other words, the value produced should be greater than the expense incurred in creating the value.

The final calculation completed by the BBPT was the determination of the operating margin. This value represented the ratio of the balance to the value of care as a percentage. The BBPT calculated this by dividing the balance by the value of care and multiplying the quotient by 100. The line of reason used in the interpretation of the balance information established that the margin percentage ideally should be a positive number.

The magnitude of the results presented by the BBPT for balance and margin was secondary to their relationship to zero. When interpreting the results, the primary question was:

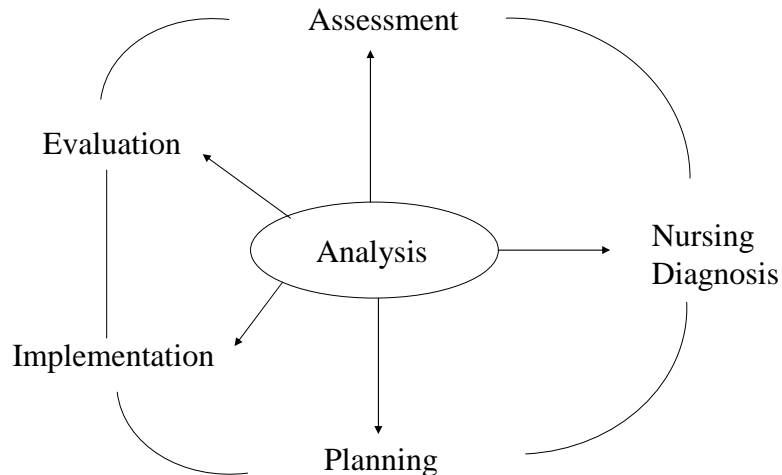
“Are they greater than zero?” As a governmental agency, the MHS operates as a budget neutral entity and with the dawning of ODRA, now more than at any point in the past, it is paramount to produce a level of revenue in line with expenses incurred in order to maintain solvency. The issue of solvency should not be interpreted from the point of view of discontinuing benefits to service members and their families. Rather, it is manifested in the color of the uniform the provider of the benefit wears: military uniform or civilian. In other words, if the MTF cannot produce a greater financial value of care than the expenses it incurs, the federal government may investigate obtaining the provided services for less expense by contracting with non-governmental agencies. Hypothetically speaking, if MTFs operate in a negative margin, then the MHS would become insolvent in much the same manner a civilian not-for-profit institution would by continually operating with a negative operating margin.

Not only does the individual clinic gain from the information, but also the MTF and Naval Medicine benefit, related to the fact that for the first time in its history, there is an identified source at the enterprise level for productivity, value and expense information (Wyatt, 2004).

The BBPT produced information from a multitude of data points. It was merely an information development tool and not an information interpretation tool. Interpretation and implementation of information to the decision making process was the responsibility of the researcher. Kongstvedt (2002) and Marcum et al. (2002) identified the need for managers to be able to utilize information in the decision making process. The critical step regarding the Financial Value of Care information produced by the BBPT lies in sound analysis and implementation of the lessons learned from the information.



The study utilized an adaptation of the Five Step Nursing Process espoused by Potter and Perry (1985) as a construct for the analysis of the data produced by the BBPT. Potter and Perry identified the five steps as assessment, nursing diagnosis, planning, implementation, and evaluation. Central to this process is the continuous analysis and incorporation of data as it becomes available (see Figure 1). Assessment refers to the collection, vetting and relaying of information. The nursing diagnosis is a qualitative statement of an actual or potential impact based on the assessment. During the planning phase, strategies are developed to remedy actual problems or avert potential problems. These strategies are enacted during the implementation phase. The final step in the process is evaluation during which performance is compared to pre-established goals in order to ascertain goal achievement. This final step provides critical feedback, enabling the assessment and the establishment of a continuous improvement process.



*Figure 1. Central to the Five-step Nursing Process Model (Potter and Perry, p. 129, 1985) is the continuous analysis and incorporation of data.*

#### *Assessment and Diagnosis*

The researcher accomplished the assessment and diagnosis of information produced by the BBPT by utilizing horizontal or chronological trend analysis and vertical or line item trend analysis. The trend analysis was accomplished by graphing the data obtained over the pertinent time period. This step enabled the researcher to identify patterns that occurred over time that were not as easily noted with the data in tabular format. Proceeding to vertical analysis, the researcher analyzed the data in graphical and tabular formats line item by line item to identify any logical incongruities.

Trend analysis enabled the establishment of internal benchmarks, which potentially can be compared to external benchmarks established by higher authority or even outside agencies,

such as Medical Group Practice Management Association (MGMA). As trends were identified, the researcher sought problems with controllable variances versus uncontrollable variances as the root cause. The focus on controllable variances facilitated the diagnosis of correctable problems.

Variance analysis, as defined by Finkler and Ward (1999), is a comparison of actual results as compared with a plan, followed by investigation to determine why the variance(s) occurred. When conducting variance analysis the clinical manager focuses on developing strategies to correct issues that fall beyond an identified control range. Finkler and Ward state that blame placing should not be the goal of variance analysis. Rather identification of underlying causes of discovered variances allowing for their sustainable correction should be the goal of variance analysis.

Finkler and Ward (1999) presented three possible reactions to identified variances. One can ignore the variance as an aberration of random error, alternately the manager can adjust the budget to provide for an unforeseen increase / decrease or poorly predicted process which will impact future budgets, or the manager can choose to change the process effecting the variance. Clearly not all of these reactions are possible choices in all situations. Thus, the manager must diligently work to identify the cause of a variance and whether it can be controlled. Finkler and Ward also presented that only those variances resulting from random error are uncontrollable and as such should be ignored.

Building on the idea that a variance is often caused by multiple interrelated issues and or processes, the manager would apply appropriate process analysis tools. Lighter & Fair (2000) delineated five categories that all healthcare related products and services could be assigned. Assignment to these categories, administrative services, clinical services, durable medical

equipment, hospital services and pharmaceuticals, provide the clinical manager the first criteria for the investigation of variances. Regardless of the category of the process at issue, the manager would apply a flowcharting process as an analysis tool to gain an in depth knowledge of the underlying cause of the variance. According to Lighter and Fair, flowcharts identify the course an input travels through a process until it becomes the output of the process. Flow charts are a useful tool in quality improvement and as such there are numerous permutations from which to choose. Basic flowcharts PERT (Program Evaluation and Review Technique), and cost of quality analysis are a few examples of flowchart options presented by Lighter and Fair. Schaffer (2002) described such a process as utilized to increase cash flow and reported productivity of a 15 member for profit civilian surgical department. Related to the notional nature of the clinic studied and the researcher's inability to utilize a multidisciplinary team of process owners in developing the flowchart an actual flowchart analysis was omitted from this study.

#### *Planning and Implementation*

Continuing through the nursing process model, the manager would develop plans to remedy variances. Planned remedies would be chosen for implementation using a decision making tool such as espoused by Longest, Rackich, and Darr (Longest Rackich and Darr, 2000). An example of such a decision tool is included in the appendix. Potential impact to the facility, cost to implement, impact on the community of interest and influence, and impact on quality of care are potential weighting criteria for the selection of identified remedies.

### *Evaluation*

The final step in the nursing process construct is the assignment of evaluation criteria. As the researcher did not actually implement any strategies, the evaluation step was omitted from the study. The clinical manager, however, would accomplish the evaluation step by developing measurable evaluation criteria specific to the strategies recommended.

### *Validity, Reliability and Limitations*

Validity and reliability issues were addressed by utilizing standardized data, which were readily available in the M2 and annually published CMAC reimbursement rates allowing for replication of the study. Utilizing a standardized tool, such as the BBPT, for data collection and processing contributed to content validity through the use of standard queries and computations. The BBPT queried data from the recently developed BUMED MTF Data Repository, which drew from the M2. The M2 is the sole source within the MHS for such data. The downside of this tool related directly to the initial use of a new system and identification of development flaws. However, the positive attributes of standardized data queries, standardized data sources and standardized computations, increased the validity as well as reliability of the study. Sources of data for the BUMED MTF Data Repository were the Standard Personnel Management System (SPMS), M2, Composite Health Care System (CHCS) and most current CMAC Table. The methodology developed and implemented by Naval Medicine in the BBPT to determine the value of care was consistent with that espoused by DiJerome et al. (1999), thus adding to the validity of the study.

The analysis of the FVOC data derived from the BBPT was limited by several factors. Although the Nursing Process Model utilized for the analysis was a well-published methodology,

it was not developed specifically for the purpose as used in this study. The researcher was limited by geographical barriers, which prevented the utilization of a multidisciplinary team within the clinic setting for data analysis and process assessment. Lastly, the results obtained were linked to the tools utilized for data analysis. If the tools selected were altered, it is unclear if the results would be the same. The identified limitations to this point have dealt specifically with the format of the research.

Validity and reliability are directly linked to the quality of the data available (Kerlinger, 1986). The overarching limitation of the study was the quality of the data present in the M2. Historically and at present, the quality of the data contained in the M2 is dependent upon human intervention on many levels. Given the large organizational size of Naval Medicine, the multiple sources of data, and the large number of human dependant processes, there were a myriad of possible sources of data inaccuracies. Examples of the sources of inaccuracies range from the responsibility of individuals to correctly report his/her workload hours utilizing MEPRS time sheets to inconsistent procedures for editing the CHCS end of day report, poor compliance with daily completion of SADR's and the subjective nature of CPT and E&M code assignment (BUMED, 2003). At the present time, the BUMED MTF Data Repository is the identified source for the data utilized in this study, as well as for analysis by Naval Medicine. Thus, the data utilized for this study were the data utilized not only by Naval Medicine but also the DHP for resource allocation decisions.

### *Ethical Considerations*

DMIS ID codes were redacted to maintain the ethical integrity of the study. This step ensured that the notional clinic was anonymous to the reader but allowed the researcher to increase the validity of the study. Additionally, data were not specific to the individual level and thus no personal identification was evident to the researcher (Cooper & Schnidler, (2001).

### Results and Discussion

Descriptive statistics were calculated for FVOC, operating margin, value, total expenses, labor expense percentage, work RVUs and available FTEs and are displayed in Table 1. Graphs of the descriptive statistics were utilized to enhance trend identification. The first trend identified at this juncture was the volatility of the operating margin (median –13.05 percent, range 93.7 percent), which lead to a negative margin for six months of the fiscal year (see Figure 2) and overall mean operating margin of negative 16 percent. In the absence of a direct comparison, the Healthcare Financial Management Association (2004) presented the average hospital-operating margin in 2002 to be 3.8 percent. Although the median value was \$73,117 per month with a standard deviation of \$11,924 per month the clinic only achieved a positive FVOC in five months of the fiscal year (see Figures 3 & 4). During the year, work RVUs displayed considerable volatility with a median value of 380.25 and a range of 200 (see Figure 5). There was an overall negative trend of work RVUS with the highest number being the first month, 499 and the lowest number being the last month, 199. It should be noted that work RVU, a measure of productivity, did not increase with the increase in available FTEs, a measure of manpower resources. After an initial 25 percent increase during the second month (\$87,000 to \$116,000),

total expenses remained relatively static from month 3 through month 8 (range of \$14,000). Total expenses grew by a total of 30 percent from \$76,218 to \$108,541 during months 9 through 12 (see Figure 6). During this same period, value remained approximately 30 percent less than expenses (see Figure 7) forcing the FVOC to the negative. For the entire year, median expenses were 12 percent greater than median value. FTEs decreased by 30 percent during the first quarter and remained relatively stable until month 8. From month 9 through month 11, a 48 percent increase occurred. This increase represented a growth from 5.8 available FTEs in month 8 to 11.1 available FTEs in month 11 (see Figure 8). Labor expenses rose in concert with available FTEs by 27 percent from \$49,153 to \$67,390 during this same period and peaked in month 12 for the year at \$81,334 (see Figure 9).



Table 1

*Descriptive statistics for FVOC, Operating Margin, Value, Total Expenses, Labor Expenses Labor Expense Percentage, Work RVUs, and Available FTEs.*

	N	Mean	Median	Range	S.D.
FVOC	12	(\$9,025)	(\$8,414)	\$72,054	\$23,237
Operating Margin	12	-16.0%	-13.1%	94.0%	106.0%
Value	12	\$76,453	\$73,117	\$36,025	\$11,924
Total Expenses	12	\$85,478	\$81,815	\$53,762	\$17,655
Labor Expenses	12	\$54,086	\$52,223	\$40,680	\$11,525
Labor Expense Percentage	12	63.8%	64.1%	30.5%	7.8%
Work RVU	12	384.5	380.25	200	55.1
Available FTEs	12	7.2	6.8	6.1	2.0

*Note. FVOC = Financial Value of Care; RVU = Relative Value Unit; FTE = Full Time Equivalent*

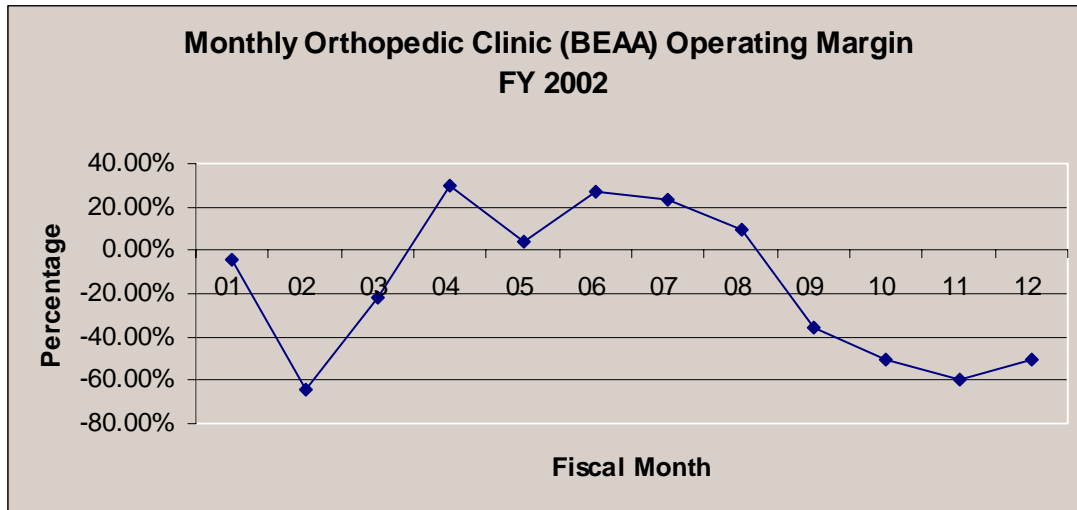


Figure 2. Operating margin determined by the BBPT during fiscal year 2002, on a monthly basis.

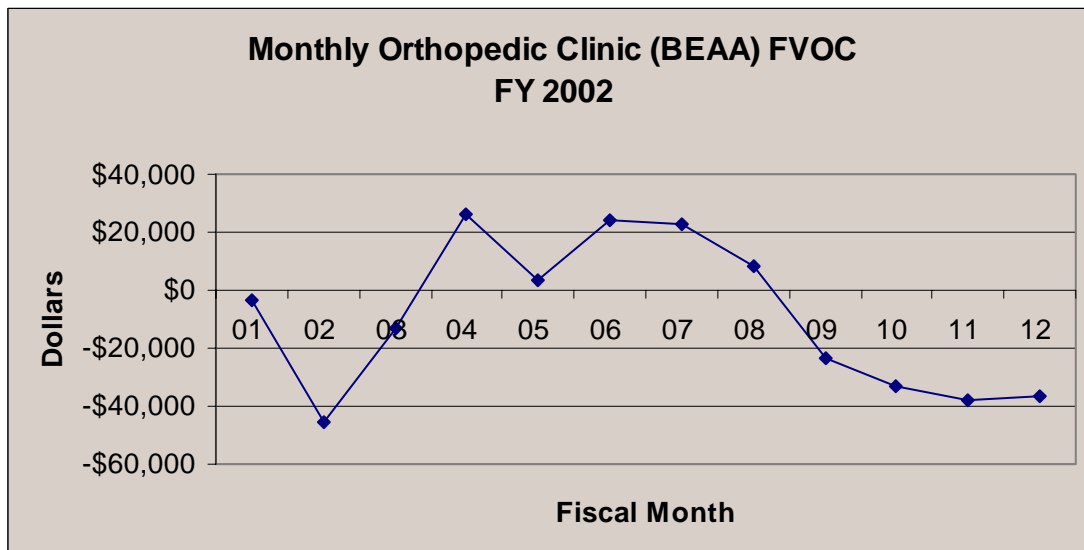


Figure 3. Financial Value of Care (FVOC) determined by the BBPT during fiscal year 2002, on a monthly basis.

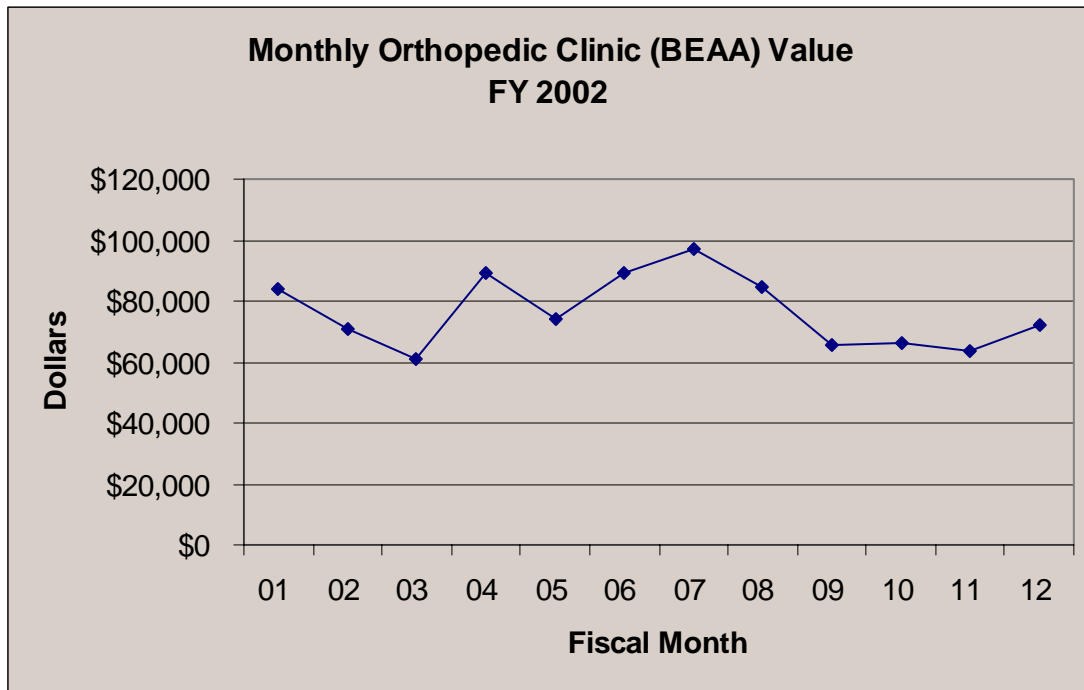


Figure 4. Value as determined by the BBPT for fiscal year 2002, on a monthly basis.

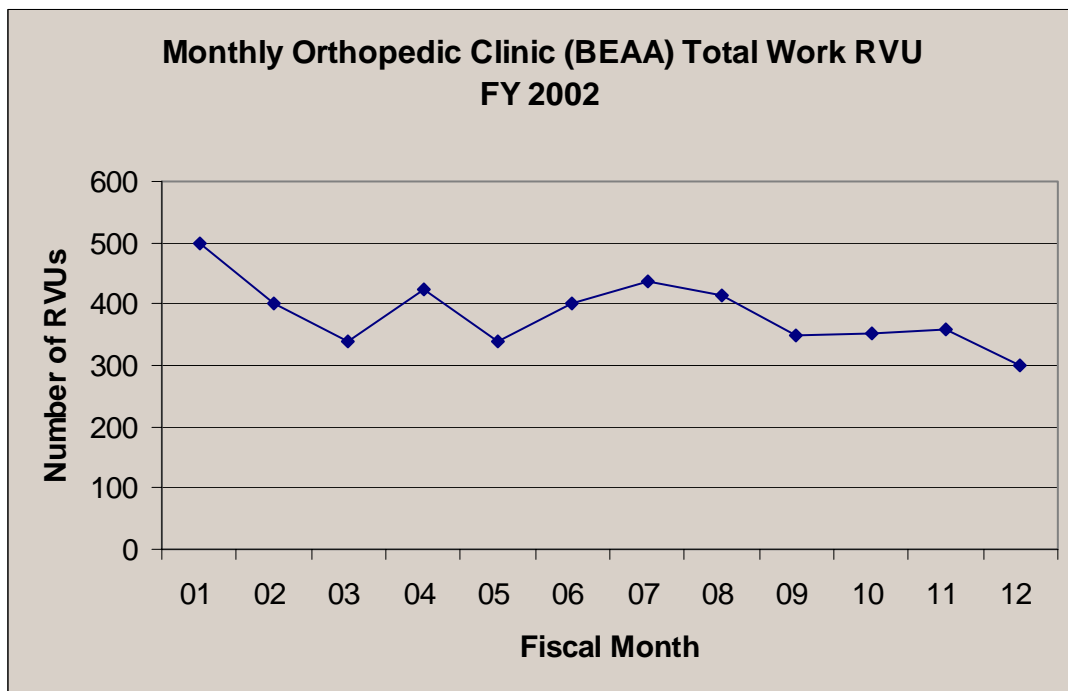


Figure 5. Total Work RVUs determined by the BBPT for fiscal year 2002, on a monthly basis.

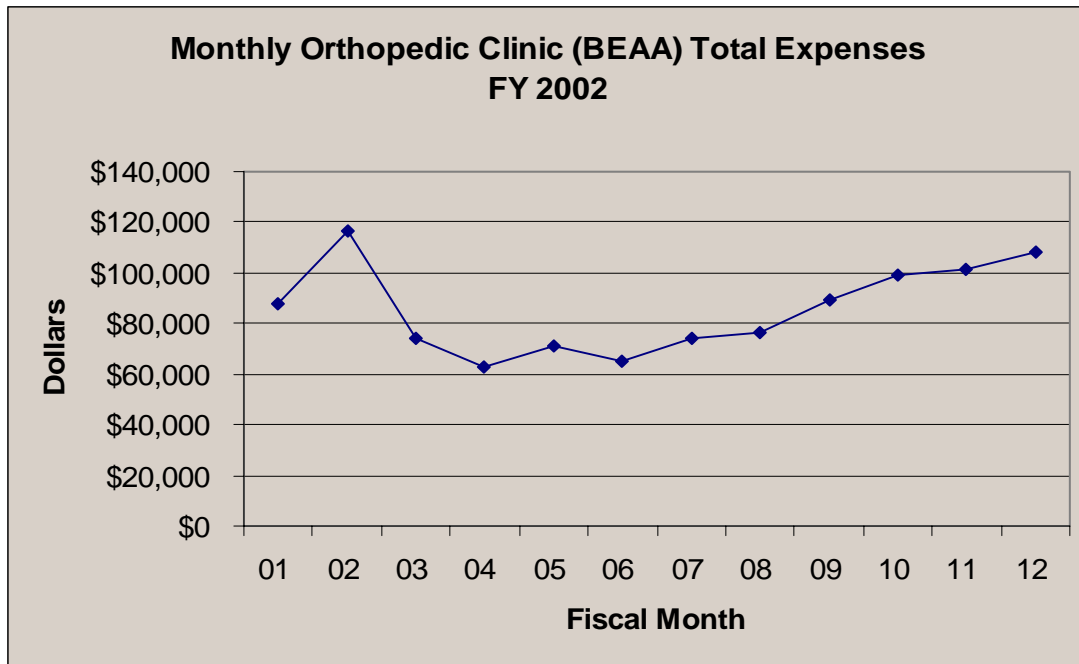


Figure 6. Total expenses determined by the BBPT for fiscal year 2002, on a monthly basis.

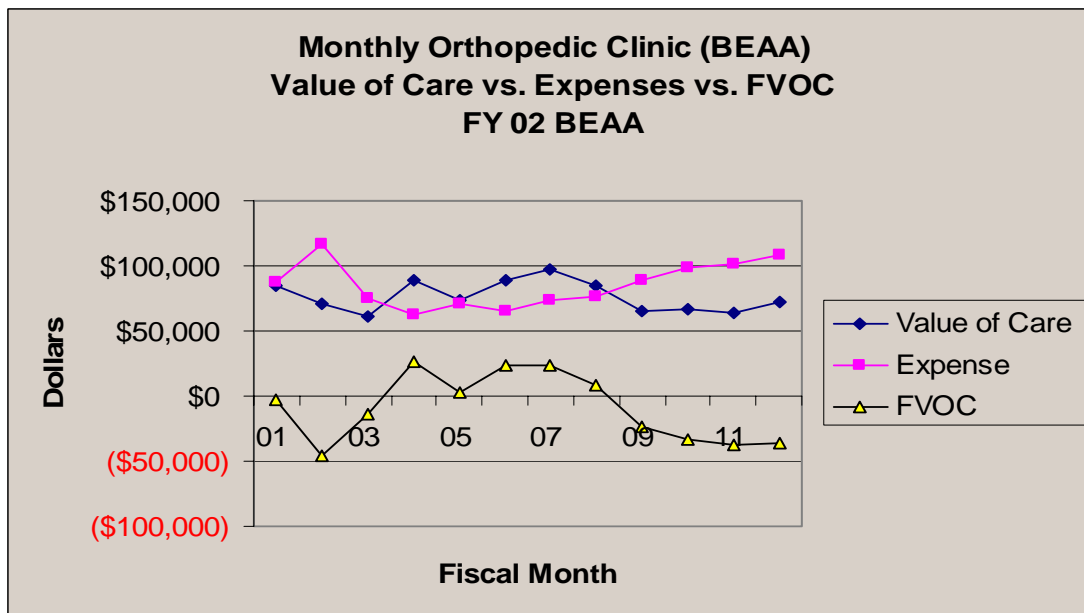


Figure 7. Value, Total Expenses and FVOC determined by the BBPT for fiscal year 2002, on a monthly basis.

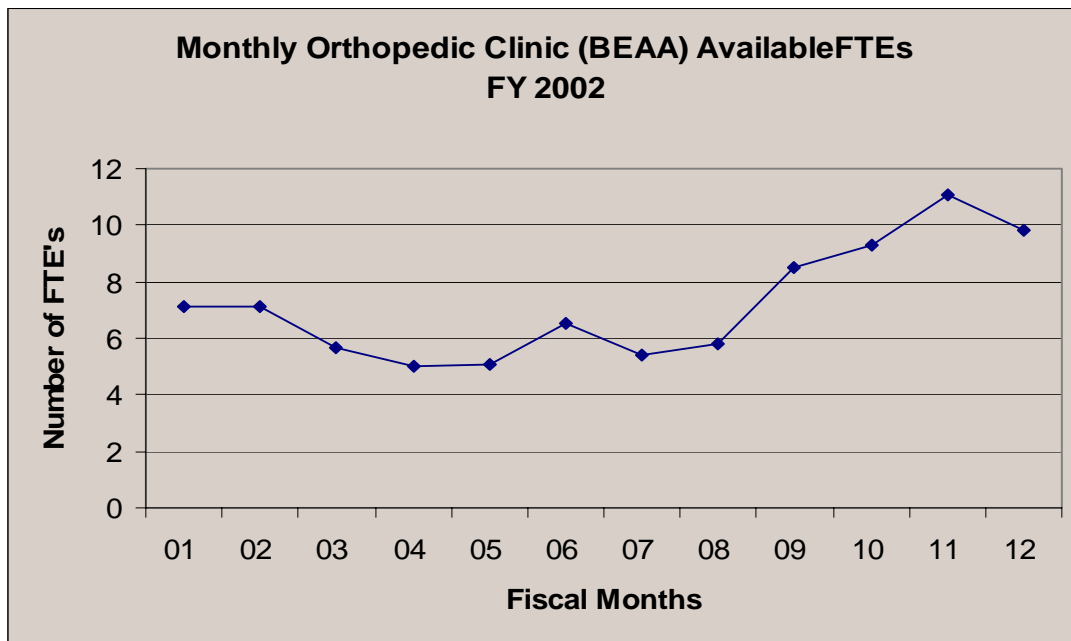


Figure 8. Total available FTEs determined by the BBPT for fiscal year 2002, on a monthly basis.

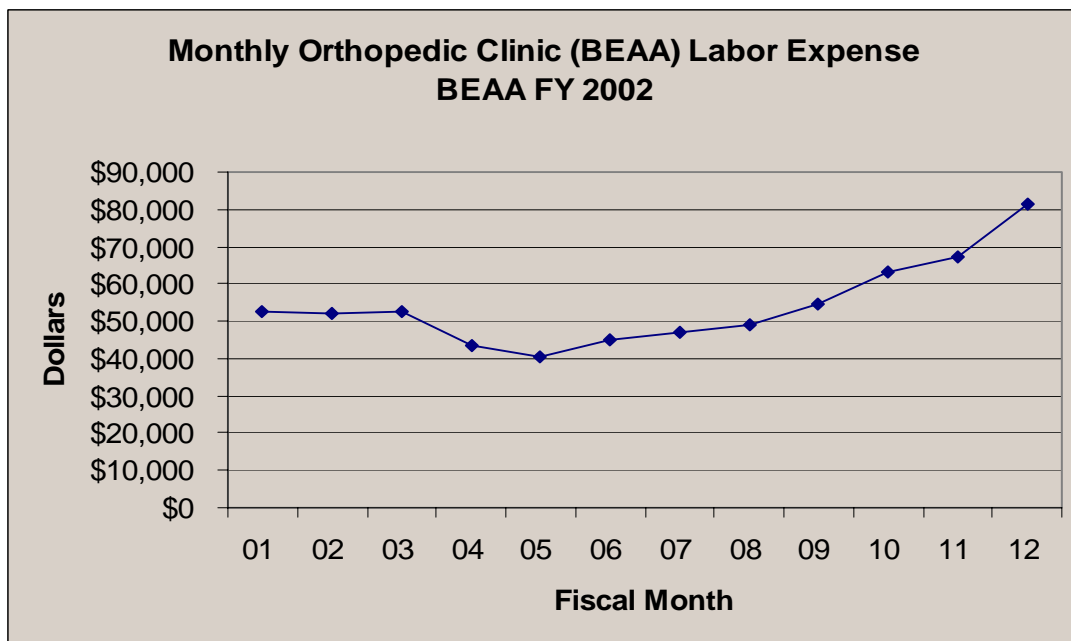


Figure 9. Labor expenses determined by the BBPT for fiscal year 2002, on a monthly basis.

After analysis of the descriptive statistics, significant correlations were sought using Pearson's Product Moment Correlation ( $r$ ) and Student's  $t$  test. Critical probability level of  $p < .05$  was assumed. This step was undertaken in order to establish the foundation of apparent causal relationships in order to strengthen the analysis. As one would suspect, the FVOC was significantly correlated as a function of value ( $t(10) = 4.69, p < .01$ ) and total expenses ( $t(10) = 7.74, p < .01$ ). Significant correlations that focused the analysis of expense data were FVOC as a function of available FTEs ( $t(10) = 3.82, p < .01$ ) and labor expenses as a function of available FTEs ( $t(10) = 5.46, p < .01$ ). Significant correlations that focused the analysis of value data were value as a function of work RVUs ( $t(10) = 3.11, p < .05$ ) and value as a function of available FTEs ( $t(10) = 2.26, p < .05$ ). It should be noted that work RVUs were not significantly correlated as a function of available FTEs ( $t(10) = 1.45, p > .05$ ). The researcher suspects the reason for this apparent relationship is related to the efficiency of the workers and the accuracy of the data reporting systems. As this was not the main focus of the study, the researcher merely speculates on this point.

Once horizontal trends and significant relationships were identified, control charts were established incorporating descriptive statistics to facilitate variance analysis. In order to strengthen the analysis median values were utilized versus means for the centerline of the charts. This was done to overcome the minimization of extreme values by using the arithmetic mean (Lee, Fung, & Fu, 2003). Upper control limits were established by adding three standard deviations to the median value while lower control limits were established by subtracting three standard deviations from the median value as espoused by (Lighter & Fair, 2000).

The operating margin control chart contributed little to the study related to tremendous standard deviation values, as illustrated in (see Figure 10). The median margin was –13.05 percent and the clinic remained within control for the entire year. However, the standard deviation was calculated to be 35.28 percent. The standard deviation created an upper control limit of 92.8% percent and a lower control limit of –118.9 percent. Clearly these limits contributed no constructive value. However, to retain internal consistency with the other control charts utilized in this analysis, the limits were maintained at three standard deviations above and below the median.

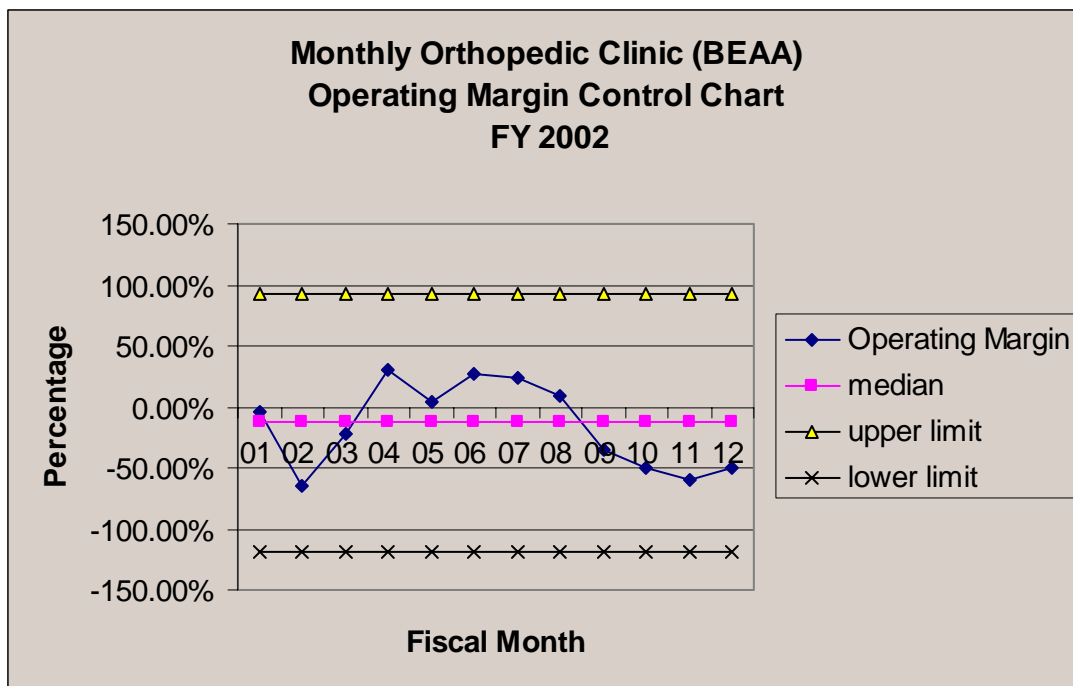


Figure 10. Control chart illustrating volatility of operating margin.

Value, which was significantly correlated to work RVUs, recorded four months at or above the upper control limit (see Figure 11). This trend negated the six months recorded at or below the median value, however returning to within control by year's end. The Work RVU control chart mirrored the trends of the value control chart but with reduced magnitude of volatility (see Figure 12). During the last month of the year, however, the work RVU control chart moved inversely to the value control chart. The significant correlation of value as a function of available FTEs explained this trend, at least in part. Throughout the period studied, value fluctuated inversely to the number of available FTEs. Thus, as the number of FTEs decreased the value increased related to the increased productivity per FTE.

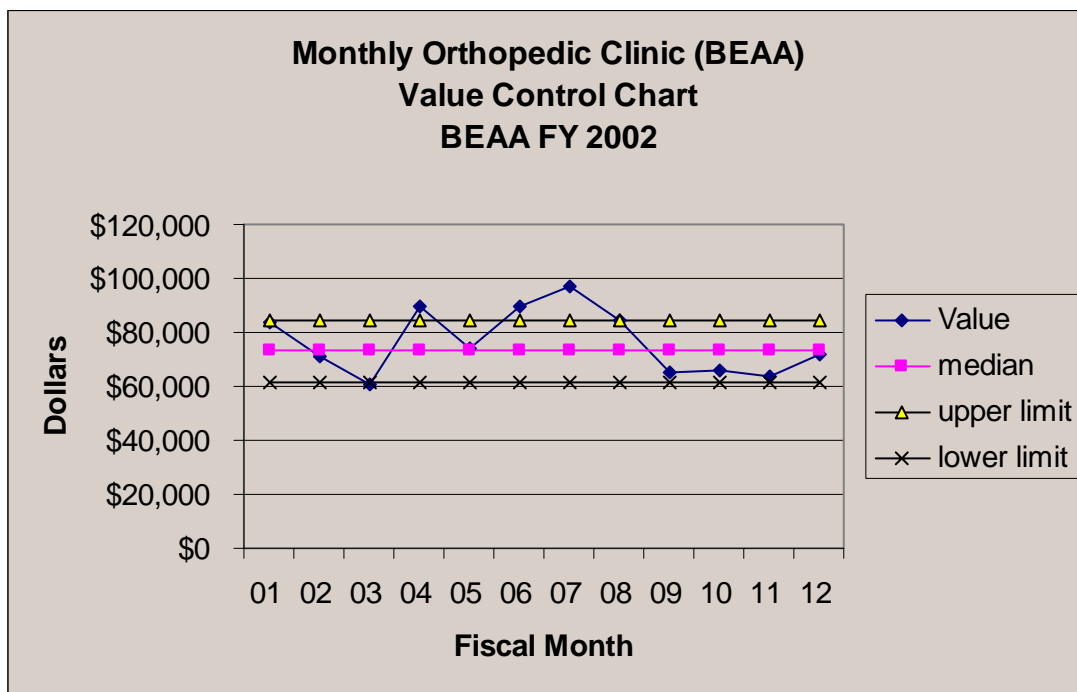


Figure 11. Control chart illustrating range of value for fiscal year 2002.



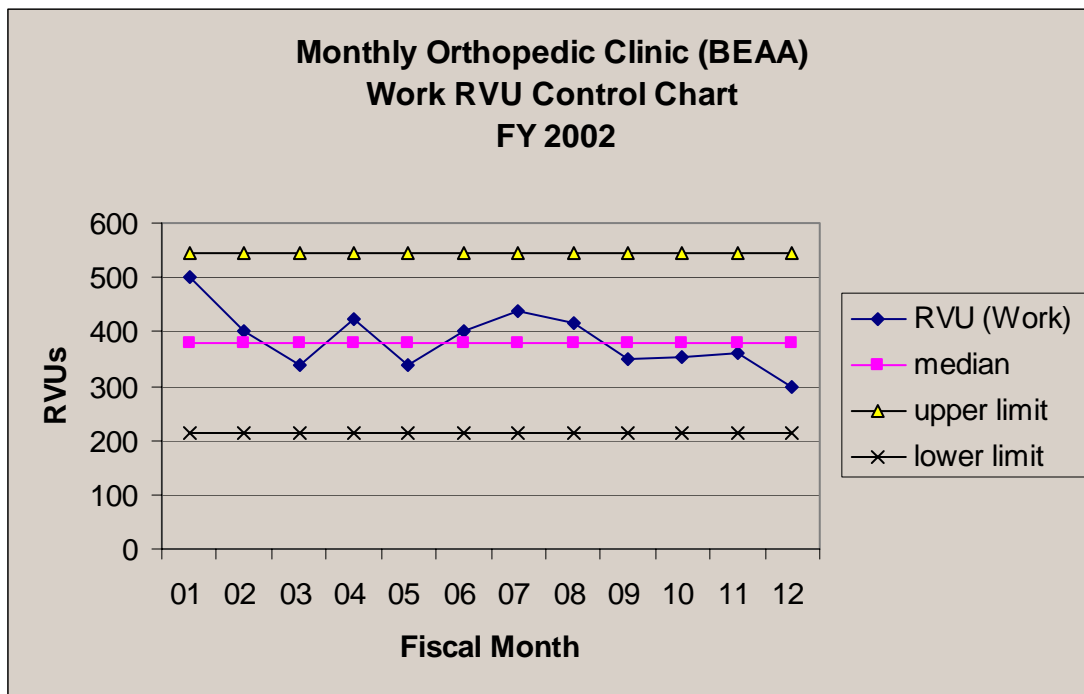


Figure 12. Control chart illustrating range of work RVUs for fiscal year 2002.

Total expenses remained within the three standard deviation control limits (see Figure 13). However, total expenses, while remaining in control, depicted a troubling trend towards the upper limit during the last four months of the year. In order to disaggregate total expenses, a labor expense control chart was developed (see Figure 14). The labor expense control chart reflected the overall trend of total expenses. Closer analysis showed labor expenses to eclipse 70 percent of the total expenses in the last month of the year (see Figure 15). As highlighted by Gapenski (2001), labor expenses are the greatest portion of a hospital's budget and they are increasing at a rate greater than non-labor expenses. As established in the correlation study, available FTEs were significantly related to labor expenses. After six consecutive months below the median value, available FTEs mirrored the increasing trend identified in labor expense and total expenses (see Figure 16).

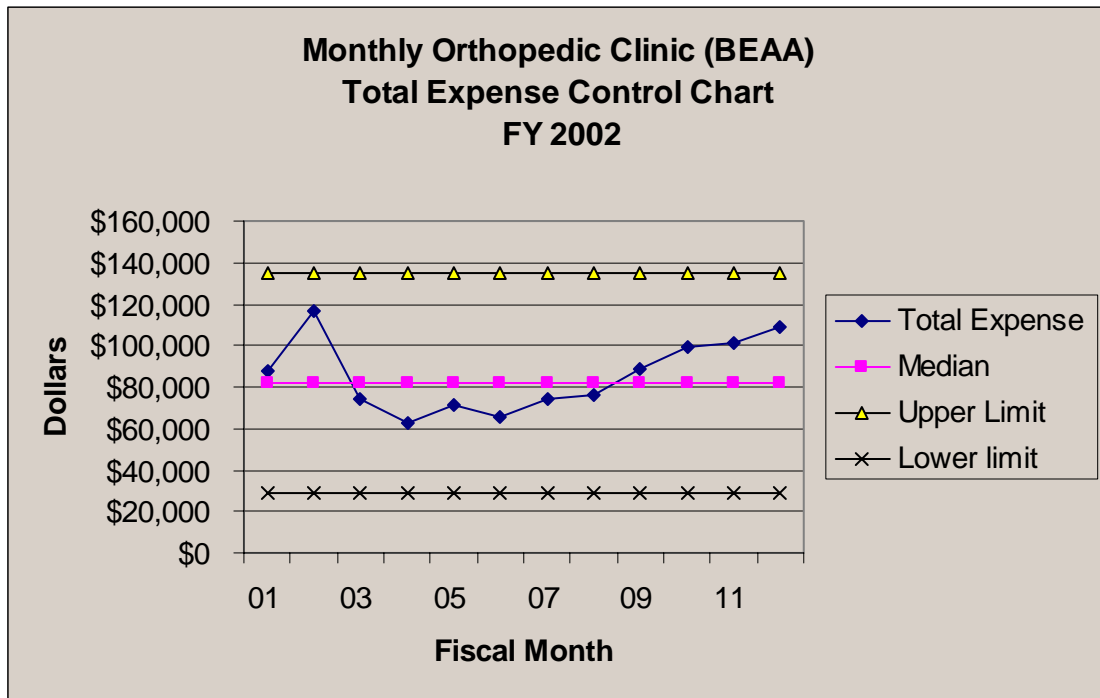


Figure 13. Control chart illustrating range of Total Expenses for fiscal year 2002.

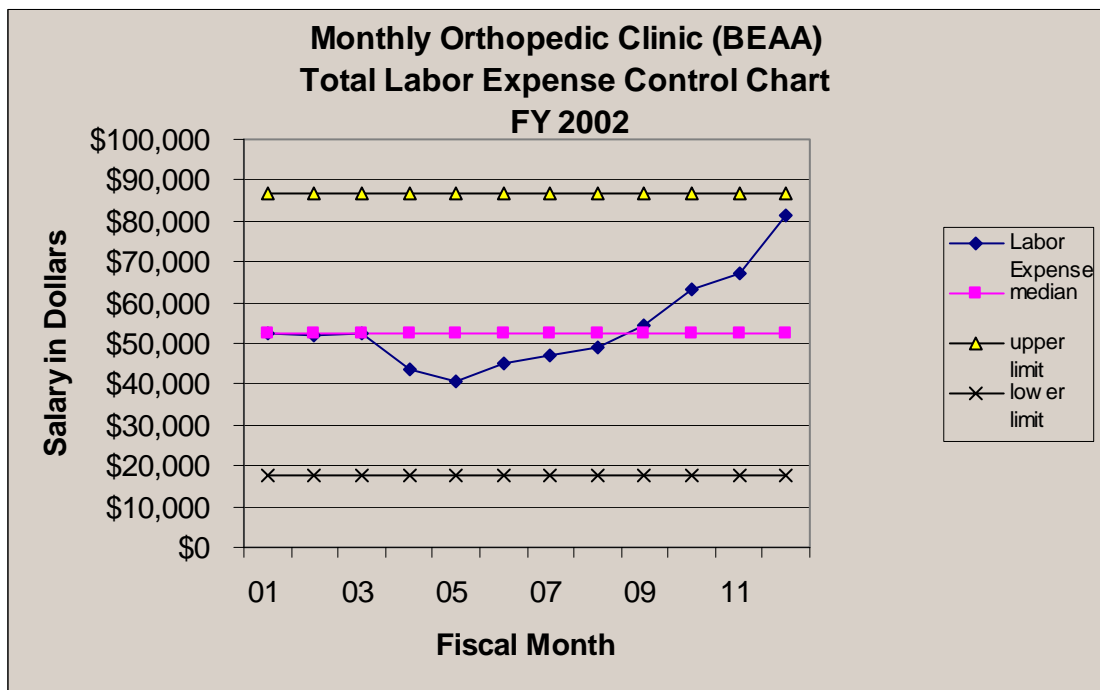


Figure 14. Control chart illustrating range of total labor expenses for fiscal year 2002.

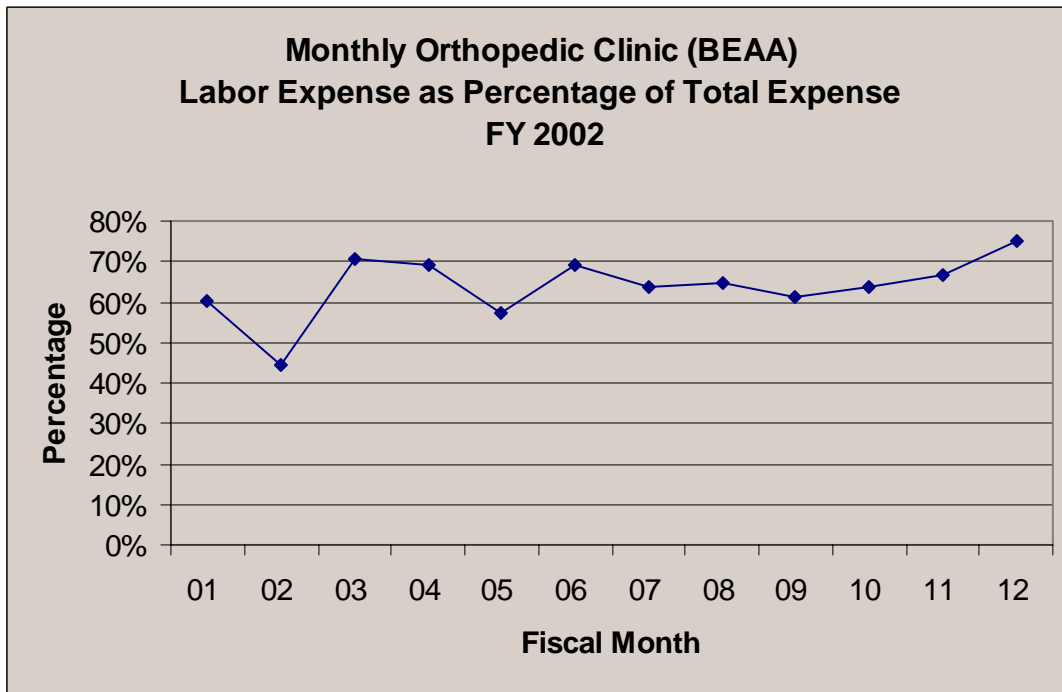


Figure 15. Portion of total expenses dedicated to labor expenses.

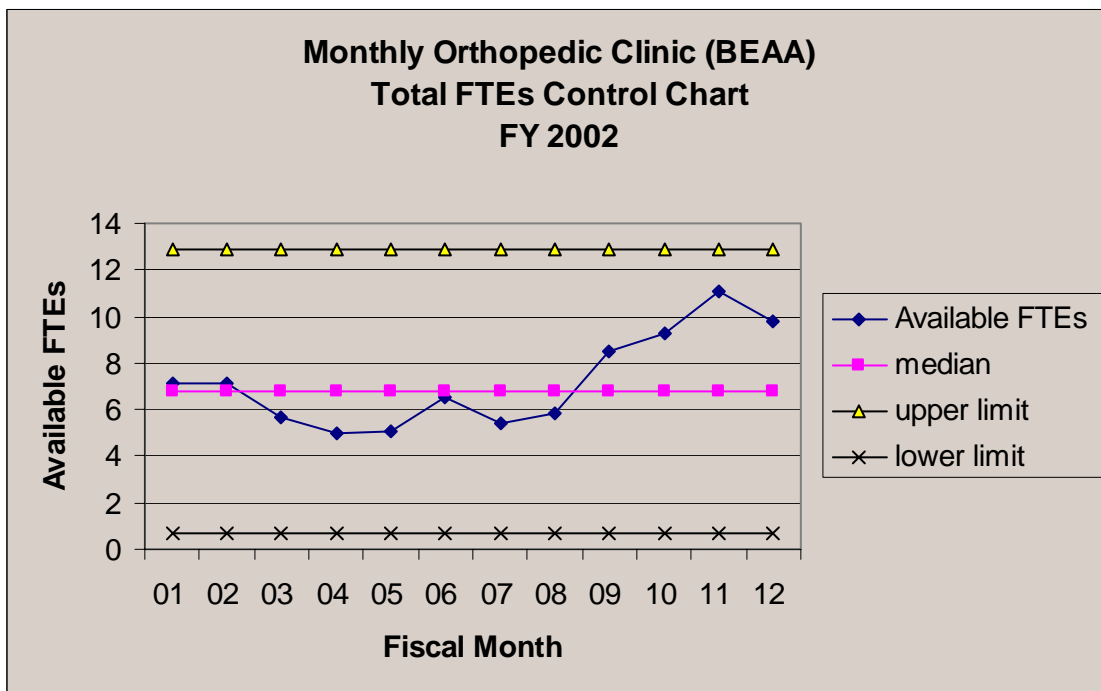
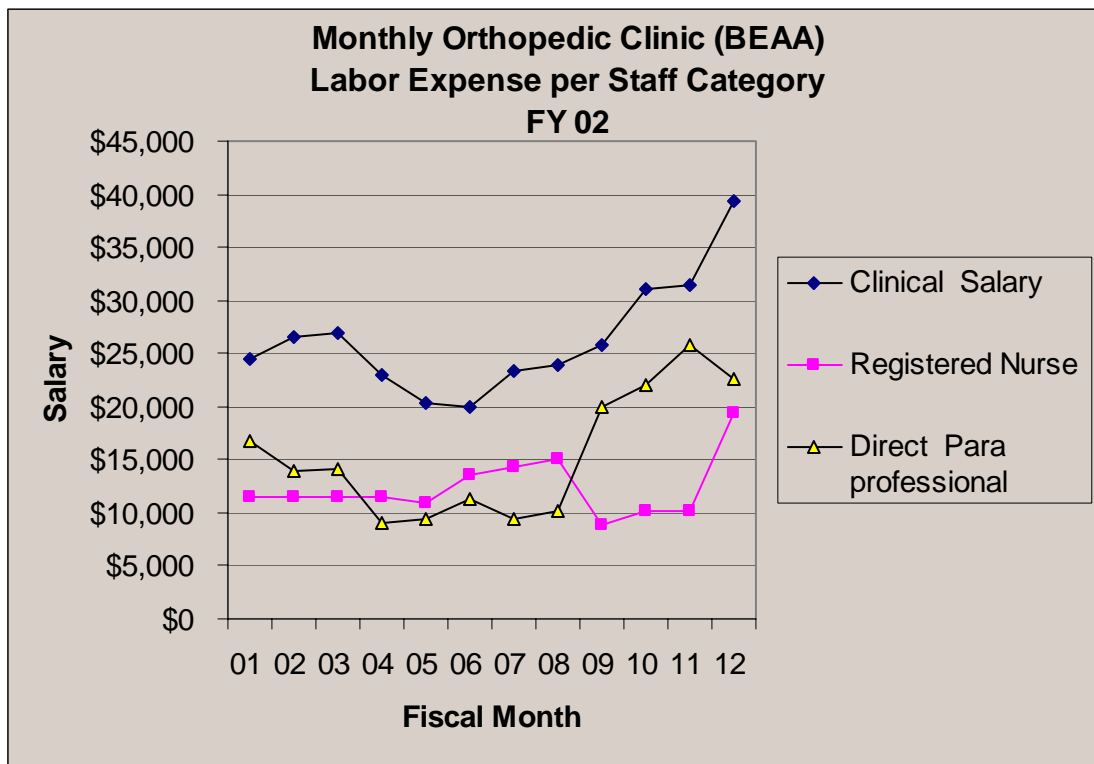


Figure 16. Control chart illustrating range of total FTEs for fiscal year 2002.



*Figure 17. Portion of total labor expenses dedicated to clinical, registered nurses, and direct paraprofessional staff.*

Further exploration of labor costs addressed labor expenses by category of FTE (see Figure 17). From month nine through month eleven, direct paraprofessional expenses nearly tripled (\$10,000 / month to \$25,000 / month) at the same time clinical staff salaries increased dramatically (\$25,000 / month to nearly \$40,000 per month). During this same period registered nurse salaries were at the lowest point of the entire fiscal year until month 12 when it eclipsed the \$20,000 / month mark.

During the last quarter of the year studied, available FTEs were increasing, causing labor expenses and total expenses to increase. All three of these variables recorded figures above the median in each of these months. Value recorded below median values for the last four months of

the year (see Figure 11) in concert with work RVUs (see Figure 12). These trends in value and expenses are reflected in the operating margin, which exceeded a negative 50 percent during the same period (see Figure 10).

Proceeding to the diagnosis step of the theoretical model, the clinic experienced increasing costs while value was decreasing which contributed to a negative operating margin. As defined in the Nursing Process Model, once a diagnosis is made, further analysis is required in order to formulate and implement an action plan to affect a change in the diagnosis.

Continuing the analysis, the volatility of value and the volatility of the available FTEs with the associated labor expenses were the variances selected for further investigation. These issues were selected for closer analysis related to the identified correlation between each variable and the balance and thus operating margin. Based on the identified correlations, the researcher assumed that by investigating the components of value and expenses, insight to the volatility of the operating margin would be gained.

Approaching the analysis of an issue, such as the volatility of revenue, from a quality improvement point of view, the initial intervention would be to gain an in depth knowledge of the process in question (Lighter & Fair, 2000). Thus, the clinic manager would first identify the key components of the process, leading to the identified issues. The first question the clinic manager should ask is “What is the measure to which revenue is applied?” The answer to this question, as set forth under ODRA, is the work RVU. Once the manager knows the measure, one would pursue the source of the measure and how the measure is determined. Proceeding in this manner the manager would discover that Work RVUs are determined in the SADR. As previously identified, a SADR should be produced for every encounter via an automated process.

This report combines workload information from the CHCS appointing module with the intensity measures assigned in the ADM module of CHCS. Once the manager knows these key components of the process it is possible to determine how SADR completion is impacted and thus the determination of RVUs by the internal processes of the clinic.

There are numerous tools one can use to assess the performance of processes. According to Lighter and Fair (2000), flowcharts identify the course an input travels through a process until it becomes the output of the process. Flow charts are a useful tool in quality improvement and as such there are numerous permutations from which to choose. Basic flowcharts, PERT Diagrams (Program Evaluation and Review Technique), and cost of quality analysis are a few examples of flowchart options presented by Lighter and Fair. Schaffer (2002) described such a process as utilized to increase cash flow and reported productivity of a 15 member for profit civilian surgical department. As previously stated, an actual flowchart analysis was omitted from this study related to the notional nature of the clinic studied.

The first flowchart to be developed would be the completion of a SADR. What are the key steps in this clinic upon which accurate and complete SADR development are based? The need for a multidisciplinary team is evidenced upon contemplation of this question. Personnel with clerical responsibilities will likely understand and have ownership of the processes by which appointment information is maintained utilizing the end of day report. Personnel with responsibility for the coding process will provide insight to specifically how E&M and CPT codes are assigned to each encounter. Clinical providers (physicians, nurse practitioners, and physician assistants) also play an important and often overlooked piece of this process, as the documentation they produce is the base upon which coders assign E&M and CPT codes. In

some settings professional coders are not utilized and providers assign codes, in these situations inclusion of providers on the team would be paramount. Representation from clinic nurses would be the final team member to be identified. The nurse provides many roles within the clinic including the provision of direct patient care, ensuring flow of patients as well as communication, and supervision of support staff. All of these identified roles of the clinic nurse have potential impact on the completion of the SADR.

Once the SADR process is understood, the manager would look to the quality of the SADR produced. Specifically, the manager would need to ensure, in fact, that every Worldwide Workload Management System (WWR) encounter has an associated SADR. Does the coding reflected in the SADR accurately reflect the true level of intensity of the encounter? These processes should be flowcharted as well to provide an understanding of the areas where inaccuracies or system failures can occur. An area of particular attention for the flow charting of the processes contributing to SADR accuracy should be the daily reconciliation of the end of day report of encounters entered in the WWR and the daily CHCS/ADM cumulative report. The reconciliation process is reflected in the SADR to WWR ratio which is included as part of the Commanding Officer's Monthly Data Quality Report (see Figure 18).

Appointment Month	HSO	Parent DMIS	Child DMIS	MEPRS	MEPRS General Name	SADR Count	WWR Count	SADR to WWR Ratio
9/1/01	redacted	redacted	redacted	BEAA	ORTHO PAEDIC CLINIC	381	444	0.86

*Figure 18. Figure represents a sample Commanding Officer's Monthly Data Quality Report from September 2002 for the notional Orthopedic Clinic. The HSO and DMIS columns have been redacted to obscure the identity of the clinic studied. The SADR to WWR Ratio standard is 1.0.*

Every MTF commanding officer is required to attest to the accuracy of the data reported by his / her command on a monthly basis. Included in this report is the ratio of SADRs to WWR reports. Ideally, this ratio should be one. If the reported value is less than one, then a SADR has not been completed for every encounter and potential revenue has been lost.

Assignment of E&M and CPT codes is governed by strict rules based upon the specific wording of the documented care provided (AMA, 2003). Coding accuracy, therefore, is an area of great concern. If the coding is under reporting the intensity of encounters, potential revenue is lost. The converse situation, however, results in fraudulent claims. In other words, up-coding, the practice of artificially increasing the intensity of an encounter is illegal, regardless of intent, and results in fraudulent claims (Kongstvedt, 2002). The clinical manager should thus apply due diligence in this assessment.

Upon completing an analysis of the volatility of the revenue, the clinic manger would shift attention to the volatility of FTEs. Following the same process, one would start by asking, "How are FTEs determined?" As previously discussed, FTE data are derived from the time



allocation data and are collected in the SPMS system via the EAS IV system. The salient questions one should ask are: 1) “Is every employee being counted properly?” and 2) “If every staff member is accounted for, is every staff member allocating his or her time appropriately to the correct MEPRS cost code (work center)?” In order to answer these questions a thorough understanding of the time allocation process utilized by the local command and its relationship to identified DoD instructions is paramount. The issue of the accurate capturing of employee workload is not isolated to Naval Medicine or the MHS. The New York Times recently reported that an audit of time clock records during a one-week time frame at Wal-Mart, the world’s largest retail chain, revealed numerous employee time allocation discrepancies. Although the nature of the discrepancies did not directly correlate to the MHS, the fact remains that employee time allocation discrepancy issues are not an issue isolated to the MHS (Greenhouse, 2004). Thus, the first flow chart in this area would be of the process applied to completion of MEPRS time allocation worksheets on the clinic level followed by the command level process. A particular area of concentration on the clinic level flow chart should be the identification of who is responsible for the completion of this information. Are individuals responsible to report their own data or is a single clerical staff member assigned to complete reporting forms for the entire department? Is the information collected using an automated process employing a spreadsheet? Is the information collected once a month using a template to report exceptions to the norm vice collecting actual hours on a daily basis throughout the month? Moving to the command level flow chart, one would investigate whether uniform processes are in place throughout the command. How does the command policy and procedures compare to DoD guidelines outlined in the MEPRS Manual.

Upon completion of the analysis of the diagnosis, a corrective action plan would be developed. The clinic manager would use a selection tool that weighs all options against established criteria as proposed by Longest et al. (2000) to identify the most appropriate actions to take. An example of such a tool is presented in the appendix.

The final step in the process is evaluation. During this step the effectiveness of the action plan is assessed. In light of the need for meaningful evaluation, measurable and objective measures should be inferred from the information presented in the flow charts (Lighter & Fair, 2000). Steps that represent keystones in the process should be noted. Upon these key steps, metrics are developed that enable the clinical manager to focus on meaningful and measurable data points. A few examples of such metrics would be the SDAR to WWR ratio as reported on the Commanding Officer's Monthly Data Quality Report, clinic level audits of MEPRS data to ensure accuracy, and external audits of coding accuracy.

### Conclusions

During a period of increased scrutiny of federal spending, Naval Medicine has charted a course towards improving the quality of business decisions made by senior leaders. As this study has presented, the BBPT provides leaders with real time data upon which to base decisions. The Financial Value of Care provides leverage to facilitate the revolutionary culture change associated with the change to ODRA. Clinical operations under ODRA will require a fundamental change in the focus of leadership. The focus, now more than ever, needs to shift towards monitoring productivity not only at the enterprise level but also at every level of the organization.

The Financial Value of Care provides the work center manager with a clear metric for determining the effectiveness of his / her decisions and a means to determine unit contribution to the enterprise. As previously stated the BBPT only provides data via standardized queries and calculations. The most important issue is not the availability of quality data but rather the sound analysis and interpretation of the data. The identified methodology will provide an in-depth analysis of variances identified by the BBPT. Working in concert, the analysis methodology identified and the Financial Value of Care produced by the BBPT will increase the quality of business decisions made within Naval Medicine. Utilizing the BBPT in such a manner provides a clinical business management tool to track internal trends, identify causes of variances, and enable the clinic to achieve greater cost efficiency from a process improvement model. Combining the presented methodology, with a firm understanding of the building blocks of the FVOC, the work center manager is prepared to lead the unit to greater productivity and increased cost efficiency.

The increased emphasis on productivity by OASD/(HA) and the Surgeon General of the Navy requires reliable productivity metrics. The key metric of productivity, determined by OASD/(HA), is the RVU. The BBPT, in part, is built on capturing and reporting RVUs. The BBPT provides senior leadership with access to real time metrics, which can be used, for budget allocation decisions. The standardization of data queries and calculations, as highlighted by Wyatt (2004), provides a common point of departure for discussions at every level of the enterprise and strengthens business decisions.

Work center managers possessing the knowledge from the identified analysis process gain credibility when discussing management issues. The ability to illustrate the impact on the

FVOC of flawed processes and practices facilitates the change process with work center staff. Clinicians and leadership alike are also more likely to respond in a more positive manner when work center managers provide hard evidence supporting management decisions (Brady & Hankins, 2003). In this light the BBPT, used in conjunction with the identified methodology, provides the work center manager with a powerful clinical management tool.

The greatest concern the researcher has regarding the BBPT and analysis methodology centers on data quality. Looking to the future of Naval Medicine, it is anticipated that the BBPT, the Business Planning Curriculum, and the shift to ODRA will provide an impetus for change regarding the quality of data reported in Naval Medicine. The quality of data in terms of timeliness, appropriateness, and accuracy is anticipated to increase dramatically relative to the initiatives identified. The improvement in data quality alone is estimated to increase the reported productivity of Naval Medicine by 10 percent (M.P. Dinneen, personal communication January 2004). This improvement estimation does not consider the impact of better business decisions or other initiatives resulting from the BBPT and associated business-planning process.

Recommendations for future initiatives related to the implementation of the BBPT focus on education, data acquisition and data quality. Educational offerings pertaining to the components of the FVOC and how these components are impacted on the work center level, as well as, analysis techniques should be included in the general professional education courses offered by Naval Medicine. Presently in order to obtain the FVOC information from the BBPT one must initiate a business plan. I propose the creation of a separate avenue within the BBPT that would enable the acquisition of data for monitoring purposes without the requirement to create a business plan. Regarding data quality, I feel the areas in which to focus should be the

SADR / WWR reconciliation process, ensuring clinical documentation aligns with CPT and E&M requirements, and the accurate capturing of workload via the MEPRS time allocation process. The issues identified address the key components of RVU determination, total labor expense allocations, and value determination, which are the significantly correlated components of the FVOC.

Future study of the FVOC and BBPT should focus on the educational requirements not only of work center managers but all leaders of Naval Medicine and the role of the Medical Officer Leadership Development Continuum in providing such education. A post implementation study assessing the impact of the BBPT and FVOC concept is warranted at yearly intervals after the BBPT has been fully implemented.

In closing, I present that the Financial Value of Care methodology is a valuable tool for work center managers. Although it can be a powerful tool, it is not a silver bullet allowing for the exclusion of other management tools and processes. If used in conjunction with a sound analysis methodology, such as the one proposed, the Financial Value of Care can increase the quality of clinical management decisions and in turn provide a mechanism to achieve the Sea Change initiated by the Department of Defense, Secretary of the Navy, Chief of Naval Operations, and the Surgeon General of the Navy.

**Appendix**

*Decision matrix to facilitate decisions between planned initiatives.*

	Alternative	Alternative	Alternative
Decision criteria	strategy 1	strategy 2	strategy 3
<hr/>			
Must meet criteria			
1. Cost Criteria	5	5	3
2. Quality Criteria	5	5	3
3. Access Criteria	2	5	3
4. Additional Criteria	1	5	3
Desired additional requirements			
1. New Mission	1	5	3
2. New Technology	1	5	3
3. Nice to have	1	5	3
4. Additional Criteria	2	5	3
Total Score	18	40	24
<hr/>			

*Note. 5= Strategy fully meets decision criterion, 3=strategy partially meets decision criterion, and 1=strategy fails to meet decision criterion. Criteria should be developed as related to the strategies. Thus, in this example alternative strategy 2 would be chosen. Adopted from Longest, Rackich, and Darr (2000).*

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